ATNS
Air Traffic Noise Screening Model
Version 2.0 User Manual

U.S. Department of Transportation
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13. ABSTRACT (Maximum 200 words) The Air Traffic Noise Screening Model (ATNS) is a computerized version of former FAA Notice N 7210.360, *Noise Screening Procedure for Certain Air Traffic Actions Above 3,000 Feet AGL*. The Notice provides guidance to air traffic managers in identifying air traffic changes that will increase aircraft noise exposure, and the possible need for an Environmental Assessment as required by Order 1050.1, *Policies and Procedures for Considering Environmental Impacts*. Although air traffic changes above 3,000 feet above ground level (AGL) are categorically excluded from further environmental documentation under Order 1050.1, new noise introduced over noise sensitive areas has the potential to be highly controversial on environmental grounds. In these instances, the exclusion does not apply and the action should be the subject of a determination of extraordinary circumstances in accordance with Order 1050.1. ATNS allows the user to evaluate potential noise impacts resulting from changes in airport arrivals and departures. The user can determine whether a proposed air traffic action will result in a 5 decibel (dB) increase in the overall community noise exposure level in communities beneath the proposed aircraft route. The model will guide the user through the steps of the noise screening procedure, perform the calculation, and prepare written documentation on the findings. Some preparation will be required, however, to compile information about the proposed change action and the communities that could be affected.		
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Preface

The Air Traffic Noise Screening Model (ATNS) is a computerized version of the former FAA Notice N 7210.360, *Noise Screening Procedure for Certain Air Traffic Actions Above 3,000 Feet AGL*. This Notice provides guidance to air traffic managers in identifying air traffic changes that will increase aircraft noise exposure, and the possible need for an Environmental Assessment (EA) as required by FAA Order 1050.1, *Policies and Procedures for Considering Environmental Impacts*.

Although air traffic changes above 3,000 feet above ground level (AGL) are categorically excluded from further environmental documentation under Order 1050.1, new noise introduced over noise sensitive areas has the potential to be highly controversial on environmental grounds. In these instances, the exclusion does not apply and the action should be the subject of a determination of extraordinary circumstances in accordance with Order 1050.1.

The ATNS allows the user to evaluate potential noise impact resulting from changes in airport arrivals and departures by screening proposed changes to determine whether new or increased noise is likely to exceed permissible levels over communities beneath the aircraft route. The model guides the user step-by-step through the noise screening procedure, performs the calculations, and prepares written documentation on the findings. Some preparation by the user is required, however, to compile information about the proposed change action and the communities that may be affected by it.

The noise screening procedure that is the basis for the ATNS originally existed as a paper-form checklist in the former FAA Notice N 7210.360, *Noise Screening Procedure for Certain Air Traffic Actions Above 3,000 Feet AGL*. This checklist was first converted to a computerized model in 1995 as ATNS 1.0. Version 2.0 of the ATNS software and this User Manual (FAA-AEE-99-01) replace the previous software and manual.

Section 1 of this User Manual contains background information on the noise screening procedure. Section 2 provides information on installing the ATNS software. Section 3 instructs the user on how to compile the necessary background information for conducting a noise assessment in ATNS. Sections 4 and 5 present detailed descriptions of the navigation and operation of the model and the ATNS dialog boxes. Section 6 describes the procedures for saving an assessment and generating output documentation. Appendix A contains the order form for requesting additional copies of ATNS, Appendix B contains several practice problems, and Appendix C contains technical notes related to the enhancements made to ATNS Version 2.0.

Acknowledgements

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Glossary of Terms

AEE	FAA Office of Environment and Energy
AGL	Above Ground Level
ATD ES	Air Traffic Division Environmental Specialist
ATNS	Air Traffic Noise Screening Model
dB	Decibel, a unit of noise level or noise exposure level
DNL	Day/Night Average Sound Level (noise metric)
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ETO	Effective Total Operation
FAA	Federal Aviation Administration
FAR	Federal Air Regulation
ft	foot, feet (unit of distance)
INM	Integrated Noise Model
lb	pounds force or weight
LJA	Large Jet Aircraft (>75,000 lb.)
mi	U.S. statute miles
MSL	Mean Sea Level (altitude above sea level)
n.mi	international nautical miles (1852 meters)
NS	Normal Suburb (residential community type)
NU	Noisy Urban (residential community type)
PC	Personal Computer
PERC	Preliminary Environmental Review Checklist
QS	Quiet Suburb (residential community type)
ROD	Record of Decision
U	Urban (residential community type)

1.0 ATNS 2.0

1.1. Enhancements

A number of enhancements have been made to the ATNS 2.0 software, both to its internal functionality and user interface, since the previous version (ATNS 1.0) was released in 1995. These enhancements include:

- Development of ATNS 2.0 for use in the Windows 95, Windows NT Workstation 4.0, and Windows 98 operating systems (ATNS 1.0 was designed for Windows 3.1 and Windows NT 3.1).

- The ability of the user to input the number of daytime and nighttime operations separately (ATNS 1.0 assumed a 90/10 day/night split).

- The ability to print output documentation directly from ATNS (ATNS 1.0 required that the user save the output file to a word processing application in order to print).

- Improvement of the "Status Diagram" allowing the user to view a flow diagram of the status in ATNS logic at any time during the assessment (the Status Diagram in ATNS 1.0 was more difficult to view and used large amounts of memory).

In addition, two of the core decision tables in ATNS 2.0 (Tables 1 and 4 in Section 4.2.2) have been regenerated using the most recent version of the Integrated Noise Model (INM Version 5.2). Due to this modification, the results obtained using ATNS 2.0 may differ slightly from results obtained using ATNS 1.0. These modifications are explained in further detail in Appendix C, "Technical Notes".

1.2 Background

There are several actions that are categorically excluded from the requirement for an Environmental Assessment (EA) under Federal Aviation Administration (FAA) Order 1050.1, *Policies and Procedures for Considering Environmental Impacts*. Examples include the establishment of federal airways, jet routes, and revised air traffic control procedures that routinely route air traffic over noise-sensitive areas above 3,000 feet above ground level (AGL). However, there are also several extraordinary circumstances which can preclude the use of a categorical exclusion for a particular action, such as an action that is likely to be highly controversial on environmental grounds.

Experience has indicated that some actions, even though they are categorically excluded and their resultant noise levels are well below the standard criteria for significant impact, may generate adverse community reaction and may thus be considered highly controversial. Actions involving jet aircraft which generate an increase in the day/night average sound level (DNL) of 5 or more decibels (dB) DNL could fall into this category, and should be the subject of a determination of extraordinary circumstances in accordance with FAA Order 1050.1.

The Air Traffic Noise Screening Model (ATNS) is intended to assist decision makers in judging the appropriateness of categorical exclusions, and in determining whether extraordinary circumstances exist for proposed actions normally excluded from an EA. The ATNS logic is derived from the same sources of scientific knowledge and information that comprise the algorithms and data in the FAA's Integrated Noise Model (INM). The INM is the well-established, standard computer tool for generating airport noise exposure maps and predicting noise impacts, as designated in FAA Order 1050.1 and FAR Part 150. The data source for the calculation of aircraft noise exposure in ATNS 2.0 is a hushkitted 727-200 with JT8D-15 engines (INM aircraft 727EM2).

ATNS was implemented for the following purposes:

- To provide a means of identifying air traffic changes that will result in an increase in aircraft noise exposure, and

- To provide guidance on the actions to be taken if it is determined that this increase has the potential to generate public controversy.

ATNS represents an effort on the part of the FAA, where consistent with operational necessity, to minimize aircraft noise in communities where the noise impact does not meet the requirements for an EA as defined in FAA Order 1050.1, and where the noise impact is not deemed incompatible with any type of land use as defined under Federal Air Regulation (FAR) Part 150, *Airport Noise Compatibility Planning*. ATNS goes beyond established EA criteria and screens new or revised air traffic control procedures that routinely route air traffic over residential areas at less than 18,000 feet AGL.

The information generated from the use of ATNS should be used during the preliminary planning phase of a proposed action. Barring the absence of extraordinary circumstances, such as potential public controversy, ATNS does not interpret or change the EA requirements of FAA Order 1050.1 or any existing agency environmental policies, including:

- The determination that new instrument approach, departure and en route procedures at or above 3,000 feet AGL are categorically excluded from environmental consideration,

- The use of a 1.5 dB increase within the DNL 65 dB contour as the FAA definition of threshold of significance for noise sensitive areas, and

- The determinations with respect to land use compatibility as promulgated in FAR Part 150 currently or as later amended.

1.3. Application

ATNS shall be used to evaluate large civilian jet aircraft operations (i.e., greater than 75,000 lb.) for departures between 3,000-18,000 feet AGL, and arrivals between 3,000-7,000 feet AGL. ATNS is intended to determine the need for further environmental consideration, and shall be applied during the preliminary planning phase of the proposed action. Upon completion of the noise screen using ATNS, the ATNS report (and, in the future, the proposed *Air Traffic Facility Preliminary Environmental Review Checklist* (PERC), in pending Air Traffic Order 7490.XX), shall be forwarded to the Regional Air Traffic Division Environmental Specialist (ATD ES) for review.

For the purposes of this procedure, a 5 dB increase in overall community noise exposure in a noise sensitive area serves as an indicator of whether a proposed action is likely to be considered highly controversial. Proposed actions are considered highly controversial when they are opposed on environmental grounds by a federal, state or local government agency, or by a substantial number of persons affected by such action. A highly controversial action is one example of an extraordinary circumstance that precludes the use of categorical exclusions. An EA is required under these conditions, and ATNS can be used to characterize the aircraft noise intrusion and evaluate possible opportunities for mitigation. The presence of a 5 dB increase alone does not require that an EA be conducted under FAA Order 1050.1, but if such an increase is foreseen, consultation with the Regional ATD ES is essential to determine further action.

Even though the presence of a 5 dB increase does not alone require that an EA be conducted, extraordinary circumstances, as contained in the PERC, may be present which require review of the environmental consequences of the proposed action. If such an increase is foreseen or extraordinary circumstances exist, consultation with the Regional ATD ES is essential.

ATNS allows the user to enter the number of operations conducted during daytime hours (7:00AM to 10:00PM), and the number of operations conducted during nighttime hours (10:00PM to 7:00AM). The night operations are subject to a 10 dB noise penalty, due to a lower tolerance for increased noise levels at night. ATNS will convert these operations to a reference number of operations called the Effective Total Operations (ETOs). ETOs are used only in the internal decision tables, and should not be confused with the actual daily operations entered by the user (see Chapter 5). The method that ATNS uses for converting user-specified daily operations to reference ETOs is explained in Appendix C, "Technical Notes".

In situations where changes in air traffic procedures are dictated by imminent concern for flight safety, controller workload, or efficiency of aircraft, the appropriate procedure should initially be implemented on an interim basis. The procedure should then be evaluated using the ATNS, and the outcome applied to determine whether that procedure should be made permanent. However, consultation with the Regional ATD ES is essential before adopting such interim procedures.

1.4. Application Conditions

The ATNS procedure applies to air traffic actions involving new or modified arrival/departure procedures, and new or modified airways, that meet the following conditions:

- Actions must involve airports with more than 1,500 civilian large jet airplane (i.e., greater than 75,000 lb.) operations per year, either current or projected, whichever is most appropriate,

- Actions must represent a permanent change or a planned test, and

- Actions must concern changes to departure routes or tracks used by civilian large jet airplanes, between 3,000 and 18,000 feet AGL, and/or changes to arrival routes or tracks used by civilian large jet airplanes between 3,000 and 7,000 feet AGL.

1.5. Procedure Steps

The noise screening procedure used in ATNS, as defined in Steps 1 through 4 below, determines whether the proposed air traffic change would result in a 5 dB increase in the overall DNL of any residential area. For the purposes of this procedure, a 5 dB increase in the overall noise exposure of a given area serves as one indicator of whether a proposed action is likely to be highly controversial, and therefore refer the air traffic specialist or planner to FAA Order 1050.1 for further action.

The following flow chart, "Noise Screening Procedures for Certain Air Traffic Actions Above 3,000 Feet AGL" (Diagram 1), outlines the four steps in the noise screening procedure. Each step

correlates to a decision table used in ATNS logic. The decision tables and associated steps are described in further detail in section 4.2.2 of this manual.

Note: In ATC procedures, aircraft altitude takes several forms, such as minimum, maximum, mandatory, recommended, and minimum obstacle clearance, all measured from mean sea level (MSL). For the purposes of ATNS, aircraft altitude is measured from above ground level (AGL). Beyond this requirement, the choice of altitude is at the discretion of the air traffic specialist, depending upon the extent of knowledge of aircraft operations on the existing or proposed route. If the vertical positions of the typical aircraft operations are distributed equally between the minimum and maximum altitudes of the route, the arithmetic average of the minimum and maximum altitudes may be the most appropriate choice. If the vertical distribution of aircraft altitudes is not known, the safe and conservative choice is the minimum altitude assigned to the particular route. Using the minimum altitude of the route is appropriate because it will generate the highest aircraft noise exposure, whereas using the maximum altitude creates a high probability of understating the aircraft noise exposure.

Diagram 1. Noise Screening Procedure
for Certain Air Traffic Conditions Above 3,000 feet AGL

Step 1:
Does the proposed action introduce noise exposure from lg. jet airplanes which may require further review of the noise impacts as defined in Table 1?

NO

YES

Step 2:
Does this action introduce lg. jet airplanes over residential areas which are not routinely exposed to jet aircraft noise as defined in Table 2?

NO

YES

Step 3:
Will the change in aircraft altitude and/or operations result in a 5 dB increase in aircraft noise as defined in Table 3?

NO

YES

Step 4:
Will the noise from lg. jet airplanes result in a 5 dB increase in the overall noise exposure as defined in Table 4?

YES

NO

- Consult with the appropriate policy office.
- Refer to Order 1050.1 for guidance on how to proceed.

- Further noise review is NOT necessary.
- Refer to Order 1050.1 for guidance on the extraordinary factors to consider.

The steps in the Noise Screening Procedure are as follows:

STEP 1. **D•es the proposed action introduce noise exposure from civil large jet airplanes (i.e., greater than 75,000 lb.) which may require further review of the noise impacts as defined in Table 1?**

ATNS shall be used on all proposed actions which meet the criteria contained in Table 1 (Section 4.2.2) and involve changes to departure routes or tracks used by civil large jet airplanes between 3,000 and 18,000 feet AGL, or changes to arrival routes or tracks used by large jet airplanes between 3,000 and 7,000 feet AGL.

The best available technical information has been used to isolate the criteria, in Table 1 and above, as the envelope of aviation conditions which must be present for the possible occurrence of a 5 dB increase in overall community noise. If those conditions are met, ATNS will proceed to STEP 2 of the screening procedure. If any of these conditions is not met, additional review of the noise impacts is not required. However, several factors may be present which require review of the extraordinary factors. Refer to FAA Order 1050.1 for guidance on the other factors to consider.

STEP 2. **Does this action introduce civil large jet airplanes over residential areas which are not routinely exposed to noise from large jet airplanes as defined in Table 2?**

Step 2 of the process separates actions which will route civil large jet airplanes over residential areas for the first time from actions over areas which are already exposed to noise from civil large jet airplanes on a routine basis.

Table 2 (Section 4.2.2) identifies the lateral minima on either side of an existing route or track that signify the zones of no change in aircraft noise exposure for the underlying communities. Any movement of an existing route or track within the bounds of the lateral minima shall not be considered to cause an increase in aircraft noise intrusion to the communities below.

If the location of any existing route or track lies beyond the lateral minima of the new route or track as a function of aircraft altitude, the residential areas beneath the new route will be regarded as receiving jet aircraft noise for the first time on a routine basis. If the location of the new route or track is at least 3.0 n.mi. from the route or track closest to the community at altitudes between 12,000 and 18,000 ft, (or, at least 2.0 n.mi. away at altitudes between 6,000 and 12,000 ft., or at least 1.0 n.mi. away at altitudes between 3,000 and 6,000 ft.) the residential areas under the new route or track shall be treated as receiving jet aircraft noise for the first time on a routine basis. If this condition is met, ATNS will proceed to STEP 4 in the noise screening procedure. Otherwise, ATNS will proceed to STEP 3 to determine whether the proposed action will cause a 5 dB increase in the existing aircraft noise exposure.

STEP 3.   **In the case of a proposed action which only changes the aircraft altitudes and/or numbers of daily operations of civil large jet airplanes on an existing route or track, will these changes result in a 5 dB increase in aircraft noise as defined in Table 3?**

STEP 3 evaluates proposed actions on existing routes which involve changes to aircraft altitudes and/or the number of daily operations on the route or track. This step encompasses those situations where the proposed route overflies residential areas already exposed to aircraft noise from an existing route or track. For the purposes of ATNS, each of the above situations is treated as the cumulative change in aircraft noise exposure due to the change in the aircraft altitude and number of operations.

This is an important means of filtering those changes to existing routes which may involve more aircraft traffic, but do not necessarily result in a 5 dB increase in aircraft noise exposure. As shown in Table 3 (Section 4.2.2), an increase of 5 dB over the existing aircraft noise exposure indicates the need for ATNS to proceed to STEP 4 for further review, in order to determine whether this increase in aircraft noise exposure is also a 5 dB increase to the overall noise exposure of the affected residential communities. If the change in aircraft altitude and/or number of operations does not result in at least a 5 dB increase in aircraft noise exposure, additional review of the noise impacts is not required. However, several factors may be present which require review of the extraordinary factors. Refer to FAA Order 1050.1 for guidance on the other factors to consider.

STEP 4.   **Taking into account the type of residential community, will the noise from civil large jet airplanes result in a 5 dB increase to the overall noise exposure as defined in Table 4?**

STEP 4 determines whether the proposed action will result in a 5 dB increase in the overall DNL of a residential area, taking into account the variety of other noise sources present in the community. While STEP 3 provided an evaluation of the change in aircraft noise exposure, STEP 4 proceeds to the next level to evaluate the increase, if any, in the overall noise exposure.

For the purposes of ATNS, a residential community is classified as a Quiet Suburb (QS), Normal Suburb (NS), Urban (U), or Noisy Urban (NU) community.[1] Accounting for the appropriate residential community type has an important impact on the ATNS analysis results. For example, a certain increase in aircraft noise exposure over the Noisy Urban community type may have little effect, whereas the same noise increase over a Quiet Suburb would result in a DNL 5 dB increase.

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[1] Residential community classifications (Quiet Suburb, Normal Suburb, Urban, and Noisy Urban) were extracted from EPA Report No. 550/9-74-004, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Ambient noise levels for these community types range from 50 dB for a Quiet Suburb, in 5 dB increments, to 65 dB for a Noisy Urban community. In ATNS, the descriptions of the residential communities are intentionally brief and broad for the purpose of applying the screening procedure nationwide. Local knowledge of residential communities is very important in categorizing the affected communities.

The departure and arrival data in Table 4 (Section 4.2.2) define the minimum number of ETOs that will generate enough aircraft noise exposure to increase the overall noise exposure by 5 dB for four generic types of residential communities. These community types are described in further detail in Section 3.2. If the estimated average daily operations for the proposed routes exceed the minimum, the user should document what has been done in the analysis thus far, and confer with the Regional ATD ES to determine further action. If the change in aircraft noise exposure does not result in at least a 5 dB increase in the overall community noise exposure, additional review of the noise impacts is not required. However, several factors may be present which require review of the extraordinary factors. Refer to FAA Order 1050.1 for guidance on the other factors to consider.

1.6. Further Environmental Review

STEP 4 is the last step in the ATNS noise screening procedure. In reaching this point, the screening procedure has established that the proposed action may cause at least a 5 dB increase in the overall noise exposure. This information alone does not indicate that an EA is needed, but becomes one factor in the determination as to whether the action is likely to be highly controversial, and therefore not eligible for a categorical exclusion. Refer to FAA Order 1050.1 for guidance on additional factors to consider and procedures to follow. Consultation with the Regional ATD ES is essential in determining the applicability of the pertinent requirements of FAA Order 1050.1 dealing with EAs.

1.7. Documentation

The files for all air traffic actions that are subject to the noise screening procedure must contain evidence that these procedures were performed. The decision not to do an EA, despite the fact that ATNS has indicated that the action will cause at least a 5 dB increase in the overall noise exposure, must be supported by a Record of Decision (ROD). The ROD must include discussions of any mitigation measures or alternative actions taken, and must be approved by the Division Manager, Regional Administrator, or designee. Further, whenever an EA or Environmental Impact Statement (EIS) is prepared, the documentation developed through ATNS shall be included in, or appended to, such a document.

2.0 Installation

2.1 Hardware Requirements

The following are the minimum hardware and software required to install and operate ATNS:

- 486 DX 33 MHz PC
- 1.5 Mb hard disk
- 8 MB RAM
- Monitor with 800x600 resolution.
- Either Windows 95 or Windows NT Workstation 4.0 (preferred), or Windows 98.

If you are working from a network, we suggest you have your system administrator execute the installation and set up a directory. If you are working from an individual PC, you or a system administrator can install the application.

2.2 How To Install

This application is contained on one 3.5" diskette labeled **ATNS 2.0 Installation Disk**. To install ATNS for the first time, place the disk into the drive and run the program called **setup.exe**. You will be prompted for a location to install ATNS.

Once installed, double-click ATNS from the File Manager or Explorer to begin the application. For more information on using the mouse and icons, please refer to your Microsoft Windows documentation. The first dialog, **Welcome to ATNS,** provides a brief introduction and a list of items you must gather to perform a noise assessment using ATNS.

3.0 Preparation

3.1 Overview

You will need to compile various types of information prior to using the ATNS. This information may be available from airport managers, earlier noise assessments, or your supervisor. It may be necessary to visit communities that could be affected by a proposed change action, or to contact real estate offices familiar with these locations.

It must be noted that collecting information on communities that may be affected by a change action can be time-consuming. It is important to check on the availability of this information from previous noise assessments or other environmental studies, and to make sure that all other information used is current.

3.2 Review Checklist

The following information is required to perform a noise assessment in ATNS:

☐ A. Description of the change action and affected fleet mix.

☐ B. Annual number of jet aircraft operations at the airport.

☐ C. Chart showing the location and altitudes at key points of nearby existing routes used by jet aircraft.

☐ D. Maps showing location and altitude above sea level (MSL) of communities beneath the proposed change.

☐ E. Classification of each community beneath the proposed change by its residential characteristics.

*Note: When specifying altitudes, ATNS measures altitudes above ground level (AGL), **not from mean** sea level (MSL). In addition, distances are in nautical miles (n.mi.), not in statute miles (mi.).*

The above checklist items are described as follows:

Change Action   A description of the proposed change action includes:

- Whether the change affects arrivals or departures,
- Route or flight path (between 3,000 and 7,000 feet AGL for arrivals, between 3,000 and 18,000 feet AGL for departures),
- Minimum altitude routinely used, or to be used, by aircraft at key points along the route,
- Number of Stage 2 and Stage 3 large jet aircraft (i.e., over 75,000 lb.) routinely using the existing and proposed route on a daily basis, and
- Whether the proposed change is permanent, a planned test, or for another purpose.

Annual Operations   Number of annual operations of large jet aircraft (i.e., over 75,000 lb.) at the airport, current and projected.

Current Routes   Chart showing the location and altitudes at key points of current routes used by large jet aircraft within 3 n.mi. of the proposed change action or new route.

Community Locations   Current local map showing the location of communities within 3 n.mi. laterally of the proposed change action or new route, and the altitude above sea level (MSL) of each of those communities. Use the airport altitude above sea level for all communities if the affected areas are relatively flat. Consider all residential communities, whether named or not, such as new subdivisions or major segments of urban locations (designate unnamed communities—for example, "east of Adamsville" or "along Route 4").

Community Type

Identify the community type of each community beneath the proposed change action according to its residential characteristics. Use one or more of the following four descriptions for each community:

- **Quiet Suburb (QS)** — mostly single family, detached dwellings on lots larger than 1/3 acre; few, if any, commercial or industrial sites.
- **Normal Suburb (NS)** — mostly single family, detached dwellings on 1/4 to 1/3 acre lots; scattered commercial areas or apartment buildings.
- **Urban (U)** — mostly row houses, apartment buildings, or detached dwellings on small lots; extensive commercial areas.
- **Noisy Urban (NU)** — mostly high-rise apartments and other multifamily dwellings near, or mixed with, large commercial developments or industrial sites, but with a substantial residential population.

Although you do not need to consider non-residential areas such as farmland, industrial complexes, or park land, review FAA Order 1050.1 to determine whether further noise impact assessment is required.

You may need to divide cities or sprawling areas into several communities to characterize them properly. Categorize communities by visiting them or by contacting real estate agents familiar with the area. If you are unable to determine the community type, assign all four types. This will ensure an appropriate analysis for worst case scenarios.

3.3 Prepare Information

You will need to complete two steps before running ATNS. Completing these steps will result in a map showing the proposed or changed route and any adjacent routes, superimposed on the communities beneath these routes. You will also need a list of potentially affected communities, each identified by residential type and the altitude of the flight path above the community in feet AGL.

The following steps will assist you in preparing the information:

Step 1: Draw Routes On Map   Draw the proposed route on the map, if the change action is for a new route location, using a solid line. Show the route location between the airport and where the aircraft will be at 18,000 feet AGL for departures or at 7,000 feet AGL for arrivals. Calculate the AGL altitude by subtracting the MSL altitude of the location on the ground from the MSL altitude of the aircraft at several key points, and record these on the map. If convenient, use community locations and locations of changes in aircraft headings as key points.

If the change action involves only an increase in the number of operations or a reduction in altitude along an existing flight path, draw the existing route as a solid line. Calculate aircraft altitudes AGL at key points along the route.

Mark off the segment of the proposed route between the airport and the location of the aircraft at 3,000 feet AGL, whether arriving or departing. The noise screen is not applicable to communities beneath that segment, so you need not be concerned with other routes adjacent to that segment nearest the airport.

Next, draw in the location of any existing routes, including the route to be replaced by the proposed route, that lie within 3 n.mi. anywhere along the proposed or changed route. Use dashed lines. You do not need to calculate AGL altitudes along these other existing routes.

Step 2: List Communities

Prepare a list of communities potentially affected by the proposed change action, beginning with the community nearest the airport but outside the segment where aircraft will be below 3,000 feet AGL. List all communities within 3 n.mi. of the proposed or changed route from where aircraft will be between 3,000 feet AGL and 18,000 feet AGL for departures, or between 7,000 feet AGL and 3,000 feet AGL for arrivals.

For each community listed, specify the altitude AGL at which aircraft using the proposed or changed route will pass overhead at the midpoint of the community and indicate the residential type of that community.

The results should resemble the sample description, map, and list on the following page.

Sample Description

Abbe Regional Airport handles approximately 91,250 large jet aircraft operations annually. An estimated 60 non-FMS Stage 2 aircraft and 20 FMS-equipped Stage 3 aircraft will use the proposed departure route daily. No other routes are in the vicinity of the current or proposed routes.

- The purpose of this proposed change action is to provide a means of navigation from runway 36 so that departures can be made by aircraft that use on board Flight Management Systems.

- Proposed change in departure route for northbound aircraft: Use runway 36 and fly heading 360 until reaching 4,500 ft. AGL over Rebecca; then turn left to heading 330 and continue climb out to or above 6,800 ft. AGL over Abbe and 9,000 ft. AGL over Suzanne.

Sample Map and List - Abbe Regional Airport
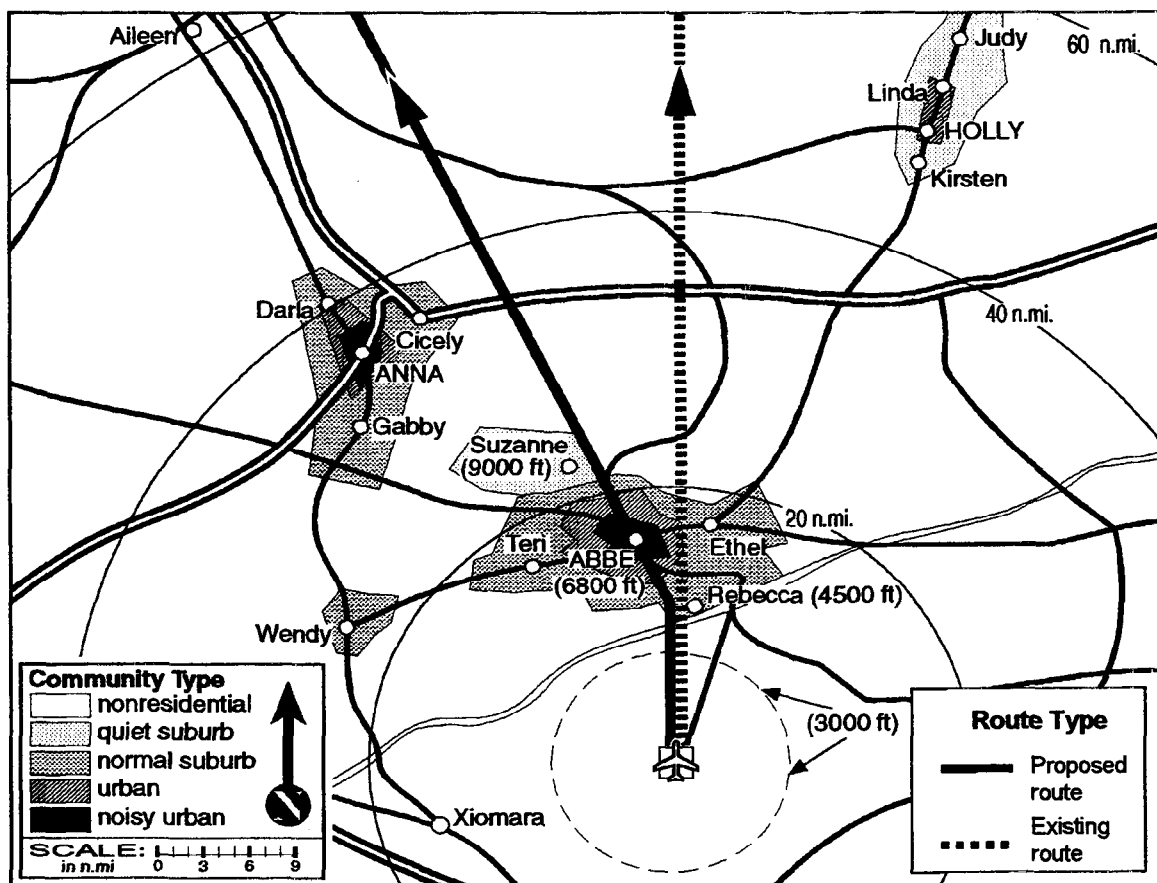
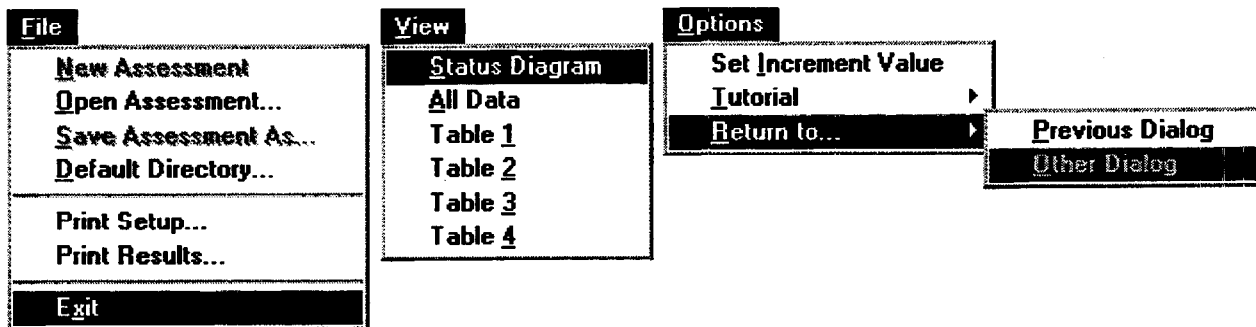| Community Name	Aircraft Altitude (AGL)	Community Type(s)
Rebecca	4,500 ft.	Normal Suburb
Abbe	6,800 ft.	Noisy Urban
Suzanne	9,000 ft.	Quiet Suburb

4.0 Operation

4.1 System Navigation

ATNS operates under Microsoft Windows 3.1, Windows 95/NT, or Windows 98 operating systems. You can operate the application using a mouse or the keyboard. For a more detailed explanation of MS Windows navigation, refer to your system user manuals.

4.2 Main Menu Bar

The ATNS Main Menu items (see Figure 1) are as follows: **FILE, VIEW, OPTIONS**, and **HELP**. Select the desired menu by clicking the mouse on the menu name or pressing **Alt** and the underlined character simultaneously. The submenu will then drop down and you can select the desired function.

Figure 1. ATNS Main Menu

File	View	Options	
New Assessment	Status Diagram	Set Increment Value	
Open Assessment...	All Data	Tutorial ▶	
Save Assessment As...	Table 1	Return to... ▶	Previous Dialog
Default Directory...	Table 2		Other Dialog
Print Setup...	Table 3		
Print Results...	Table 4		
Exit			

4.2.1 File

The **File** menu option provides the following choices:

- **New Assessment**. Use to begin a new assessment. (This will bring you to the **Welcome to ATNS** dialog).
- **Open Assessment**. Use to retrieve a previous assessment (select a .DAT file).
- **Save Assessment**. Use to save an assessment.
- **Default Directory**. Use to specify the default path and directory to store ATNS results and data files.
- **Exit**. Use to exit the application and return to Windows.

4.2.2 View

The **View** menu option allows you to look at the overall decision flow of the ATNS application, the data entered for the current noise assessment, and the tables used in the ATNS calculations. The following choices are provided: **Status Diagram, All Data, Table 1, Table 2, Table 3,** and **Table 4**.

Table 1, Table 3, and Table 4 refer to the operations necessary for generating a 5 dB change. The number of possible combinations of Stage 2/Stage 3 aircraft, each with potentially different day/night percentages, is very large. If each were evaluated directly, each combination would require a separate set of decision tables. Rather than using this multitude of combinations, ATNS converts the user-entered operations to a reference Stage 2/Stage 3 and day/night percentage, thus requiring only one set of decision tables. These converted operations are called Effective Total Operations (ETOs), and appear in Tables 1 and 4. The user should keep in mind that ETOs are reference operations normalized to a common aircraft and common day/night split, and should not confuse ETOs with actual daily operations entered by the user. More information on ETOs is provided in Appendix C, "Technical Notes".

Status Diagram

The **Status Diagram** menu option (see Figure 2) allows you to view a flow diagram of your status in ATNS logic at any time during the assessment. It illustrates the steps that ATNS has used in the current assessment, and the decision reached at each step. Each of the numbered diamonds represent a decision point at which ATNS will answer a question based on data the user has entered. A more detailed description of the decision points in the Status Diagram is given in the descriptions of Decision Tables 1-4 in this section. The three rectangles signify points at which ATNS will terminate the evaluation due to no foreseeable noise impact (T1), no residential impact (T2), or a possible impact (T3). By pointing the cursor to a numbered area, a text box will appear in the lower left of the diagram describing the decision.

Figure 2. Status Diagram
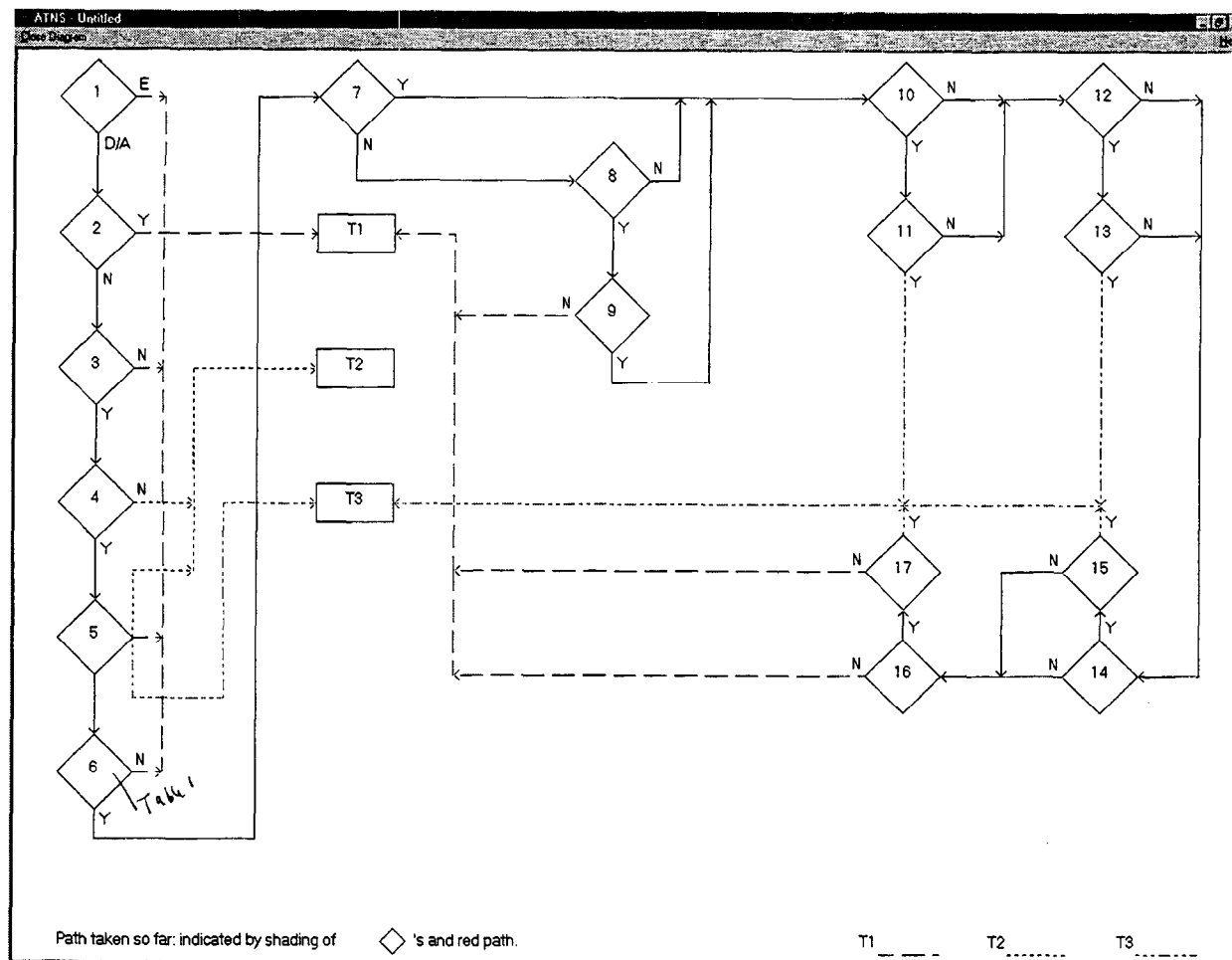
Shaded areas and red lines [——] The shaded areas and red lines indicate the current path in the assessment.

Purple lines [— — — —] The purple lines indicate logic flow that leads to assessment termination No. 1, "No Impact."

Blue lines [— — — — — —] The blue lines indicate logic flow that leads to assessment termination No. 2, "No Residential Impact."

Green lines [—··—··—] The green lines indicate logic flow that leads to assessment termination No. 3, "Possible Impact."

All Data

The **All Data** menu option (see Figure 3) provides a means to view all of the data currently entered for the present assessment at any time during the assessment.

Figure 3. All Data

Table 1

The **Table 1** menu option (see Figure 4) displays ATNS Decision Table 1. The table is provided for reference purposes only and cannot be edited. Table 1 is used at decision point No. 6, as indicated on the Status Diagram (see Figure 2).

Figure 4. ATNS Decision Table 1

Minimum Number of Effective Total Operations by Large Jet Airplanes (>75,000 lb.) on the Affected Route		
Aircraft Altitude (ft. AGL)	Departures	Arrivals
3000	5	129
4000	10	241
5000	17	418
6000	27	663
7000	41	701
8000	59	701
9000	82	701
10000	107	701
11000	145	701
12000	187	701
13000	241	701
14000	303	701
15000	373	701
16000	448	701
17000	564	701
18000	694	701

Table 2

The **Table 2** menu option (see Figure 5) displays ATNS Decision Table 2. The table is provided for reference purposes only and cannot be edited. Table 2 is used at decision point No. 8 as indicated on the Status Diagram (see Figure 2) to evaluate the No Change Lateral Minima.

Figure 5. ATNS Decision Table 2.

No Change Lateral Minima	
Aircraft Altitude (ft., AGL)	No Change Lateral Minima (n. mi.)
3000-6000	1
6000-12000	2
12000-32000	3

Table 3

The **Table 3** menu option (see Figure 6) displays ATNS Decision Table 3. The table is provided for reference purposes only and cannot be edited. Table 3 is used at decision point No. 9 as indicated on the Status Diagram (see Figure 2) to evaluate the change in aircraft noise exposure.

Figure 6. ATNS Decision Table 3

Change in Alt. for Lg. Jet Airplanes (%)	Change in Aircraft Noise Exposure (decibels, DNL) — Change in Number of Effective Total Operations of Large Jet Airplanes (%)																				
	-90	-70	-50	-30	-10	0	10	30	50	70	90	100	110	130	150	170	190	210	230	250	260
10	-11	-6	-4	-3	-1	-1	-1	0	1	1	2	2	2	3	3	3	4	4	4	4	5
5	-11	-6	-4	-2	-1	-1	0	1	1	2	2	2	3	3	3	4	4	4	5	5	5
0	-10	-5	-3	-2	0	0	0	1	2	2	3	3	3	4	4	4	5	5	5	5	6
-5	-9	-5	-3	-1	0	1	1	2	2	3	3	4	4	4	5	5	5	5	6	6	6
-10	-9	-3	-1	0	1	1	2	2	3	3	4	4	4	5	5	5	6	6	6	7	7
-15	-8	-3	-1	0	1	2	2	3	4	4	5	5	5	5	6	6	6	7	7	7	7
-20	-8	-3	-1	1	2	2	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8
-25	-7	-2	0	2	3	3	4	4	5	5	6	6	6	7	7	7	8	8	8	9	9
-30	-6	-1	1	2	3	4	4	5	6	6	7	7	7	7	8	8	8	9	9	9	9
-35	-5	-1	2	3	4	5	5	6	6	7	7	8	8	8	9	9	9	10	10	10	10
-40	-4	0	3	4	5	6	6	7	7	8	8	9	9	9	10	10	10	10	11	11	11
-45	-4	1	3	5	6	6	7	8	8	9	9	9	10	10	10	11	11	11	12	12	12
-50	-3	2	4	6	7	8	8	9	9	10	10	11	11	11	11	12	12	12	13	13	13
-55	-1	3	6	7	8	9	9	10	10	11	11	12	12	12	13	13	13	14	14	14	14
-60	0	5	7	8	9	10	10	11	12	12	13	13	13	14	14	14	15	15	15	15	15
-65	1	6	8	10	11	11	12	12	13	14	14	14	15	15	15	16	16	16	17	17	17
-70	3	8	10	11	13	13	13	14	15	15	16	16	16	17	17	17	18	18	18	18	19
-75	5	10	12	13	15	15	15	16	17	17	18	18	18	19	19	19	20	20	20	20	21
-80	7	12	14	16	17	17	18	19	19	20	20	20	21	21	21	22	22	22	23	23	23

Table 4

The **Table 4** menu option (see Figure 7) displays ATNS Decision Table 4. The table is provided for reference purposes only and cannot be edited. Table 4 is used at decision points No. 11, 13, 15, and 17 as indicated on the Status Diagram (see Figure 2) to evaluate whether the proposed change will cause a 5 dB increase in noise over the community.

Figure 7. ATNS Decision Table 4

Minimum Number of Effective Total Operations by Large Jet Airplanes (>75,000 lb.), by Community Type								
Aircraft	***Departures***				***Arrivals***			
Altitude (ft, AGL)	**Quiet Suburb**	**Normal Suburb**	**Urban**	**Noisy Urban**	**Quiet Suburb**	**Normal Suburb**	**Urban**	**Noisy Urban**
3000	5	17	53	166	129	409	701	701
4000	10	31	98	310	241	701	701	701
5000	17	55	174	551	418	701	701	701
6000	27	85	270	701	663	701	701	701
7000	41	129	409	701	701	701	701	701
8000	59	187	591	701	701	701	701	701
9000	82	258	701	701	701	701	701	701
10000	107	340	701	701	701	701	701	701
11000	145	458	701	701	701	701	701	701
12000	187	591	701	701	701	701	701	701
13000	241	701	701	701	701	701	701	701
14000	303	701	701	701	701	701	701	701
15000	373	701	701	701	701	701	701	701
16000	448	701	701	701	701	701	701	701
17000	564	701	701	701	701	701	701	701
18000	694	701	701	701	701	701	701	701

4.2.3 Options

The **Options** menu option allows you to set ATNS application-wide options, as well as choose navigation options. The following menu items are provided: **Set Increment Value**, **Tutorial**, and **Return to....**
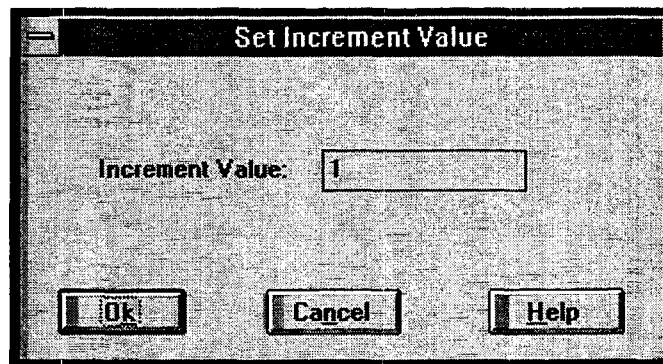
Set Increment Value

The **Set Increment Value** dialog box (see Figure 8), which is accessed from the Options selection on the Main Menu, allows you to designate the amount that a number in an edit box associated with the ▣ and ▣ buttons will be increased or decreased (where appropriate) each time you click on the buttons with the mouse.

Figure 8. Set Increment Value Window

| **Increment Value** **Edit Box** | Enter the desired increment value. You may enter a number between 1 and 32,767. Place the cursor in the edit box by either tabbing to it or by moving the mouse pointer over the top of the edit box and clicking the left mouse button. Now type the desired value and select the **Ok** button. |

Tutorial

Use this menu item to toggle the **Tutorial** on or off. If this is the first time you are using the ATNS application, we suggest that you turn the tutorial on. The tutorial window (see Figure 9) will appear to the right of each dialog as you proceed through the application. You can activate the tutorial at any time during your assessment. The information in the tutorial is similar to HELP, though more in-depth.

If you are unsure of what to input or how to navigate in ATNS, you may access HELP at any time by activating the HELP item at the bottom of any dialog.

Figure 9. Sample Tutorial Window

Tutorial for the Assessment Information

The dialog you now see is the Assessment Information dialog. This is where you input the assessment name, airport name, and information about the person performing the assessment.

You must complete all fields in the Assessment Information dialog. The cursor will appear in the box labeled **Assessment name**. Type in a name for the assessment and press the tab key to continue to the next box. The tab key will automatically take you to the next **edit box** to complete. Another way to proceed to an edit box is to place the mouse pointer within the desired edit box and click the left button on the mouse and the cursor will appear at the point you will begin to type. The cursor now appears in the **Airport Name** box and you type in the name of the airport in which the proposed change will occur. Proceed to the **Assessment Description** box. You may now type in the description of your assessment.

Proceed to the **Name** edit box and type your name, then proceed to the **Title** edit box. Type in your position title for example, Air Traffic Specialist. The final box to complete the screen will be the **Facility** edit box. Proceed to this box and type in the name of the facility where you are

Return to...

The **Return to...** dialog box (see Figure 10), which is accessed from the Options selection on the Main Menu, allows you to return to any other dialog box that you have already completed in the current assessment. If you edit the values in the dialog you return to, the ATNS software will go through the appropriate sequence of steps based on the edited values. If the values in the dialog are not edited, clicking on the OK button results in going to the next dialog in the same sequence as in the original steps.

Figure 10. Return to Other Dialog Window
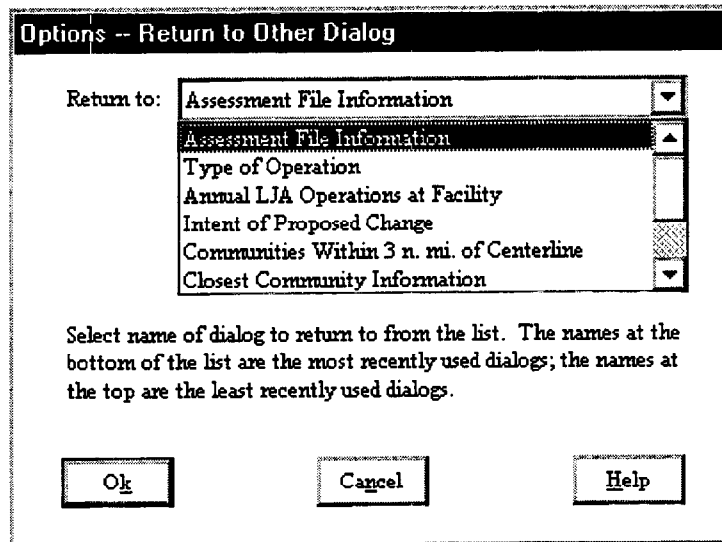
**Return to Drop
Down List**

This list contains the names of dialog boxes you have already completed within the current assessment. The name appearing in the visible item at the top of the list box in the edit box is the dialog that you have chosen to return to. You may choose this dialog box from the drop down list. To choose a dialog box from the drop down list, click on the ▣ with the mouse. Scroll through the list until the dialog box that you want to select is visible. Click on the name of that dialog box to select it.

4.2.4 Help

This feature is used to view the contents of HELP, including a glossary and an index of terms used in the application. If you are unsure of what to input or how to navigate in ATNS, you may access HELP at any time by activating the HELP item from the Main Menu bar or the Help button at the bottom of any dialog.

5.0 The Dialog Boxes

This section describes each dialog box in the ATNS application, and offers a detailed explanation of how the user should respond to each. Should you need assistance while using the application to conduct a noise screen, you also can refer to the **Help** and **Tutorial** options, which are accessible from most dialog boxes.

5.1 ATNS Buttons

The dialog boxes may contain the following buttons for navigation purposes. Their meanings and uses are:

Ok Button

The **Ok** button tells the ATNS software that you are ready to move on to the next step. This button can be activated by clicking on it with the left mouse button or by pressing the Alt and K keys simultaneously. When the OK button is selected, the ATNS software will display the next dialog according to the logic in the software.

Cancel Button

The **Cancel** button tells the ATNS software that you want to return to the dialog box immediately preceding the current one. To activate this button, click on it with the left mouse button or press the Alt and N keys simultaneously. When the Cancel button is selected, the ATNS software will display the preceding dialog box.

Help Button

The **Help** button in each dialog allows you to obtain additional instructions about the current dialog. This button can be activated in one of two ways: by clicking on it with the left mouse button or by pressing the Alt and H keys simultaneously. When the Help button is selected, the help sub-system opens and displays the help text for the dialog box.

Increment Button

This button increments the value in the edit box. You can click on this button with the mouse only. Granularity is specified via the Set Increment Value option (see Section 4.2.3). Each time the button is clicked on, the number in the corresponding edit box is incremented by the specified granularity.
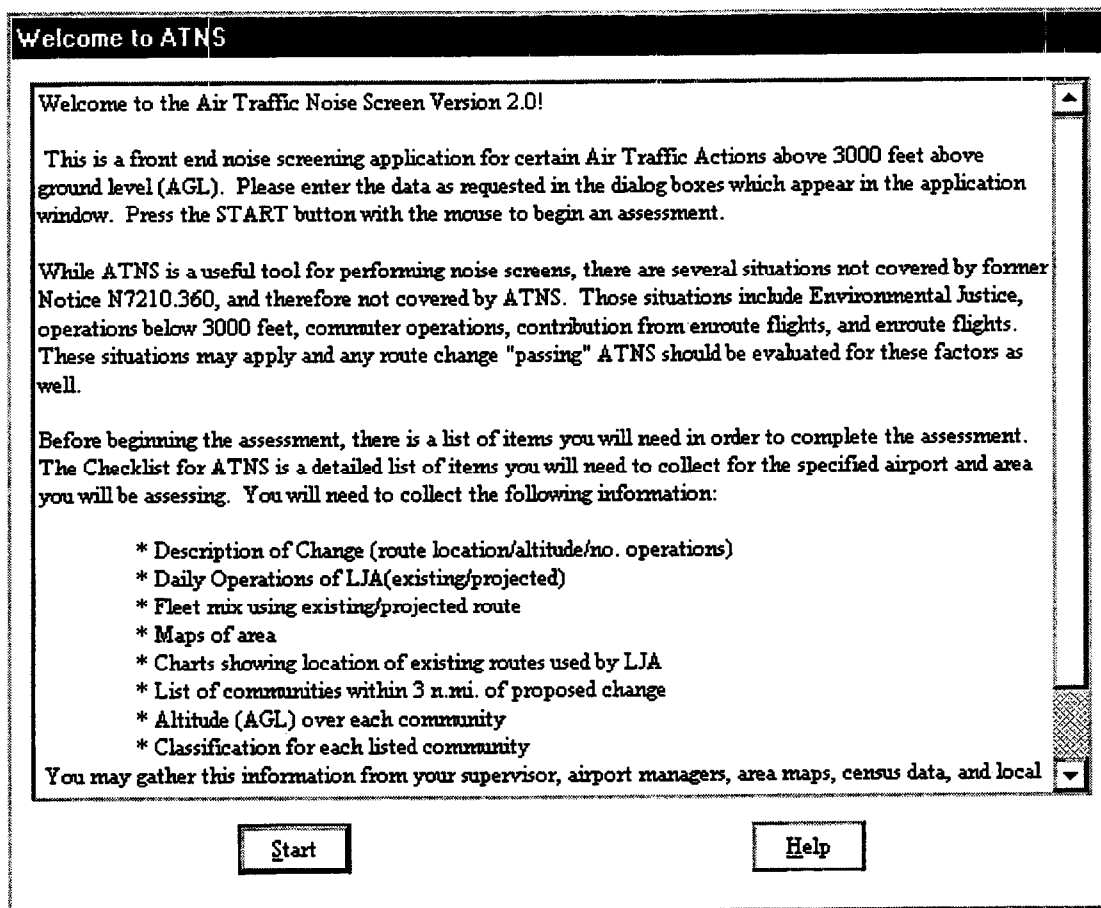
Decrement Button

This button decrements the value in the edit box. You can click on the button with the mouse only. Granularity is specified via the Set Increment Value option (see Section 4.2.3). Each time the button is clicked on, the number in the corresponding edit box is incremented by the specified granularity.

5.1 Welcome to ATNS

When you open the ATNS you will see the **Welcome to ATNS** screen pictured in Figure 11 below, which serves as an introduction to the application. It contains initial instructions for using the application, as well as a list of the information you will need about the proposed route, existing route, and communities surrounding the proposed route.

Figure 11. ATNS Welcome Window

Welcome to ATNS

Welcome to the Air Traffic Noise Screen Version 2.0!

This is a front end noise screening application for certain Air Traffic Actions above 3000 feet above ground level (AGL). Please enter the data as requested in the dialog boxes which appear in the application window. Press the START button with the mouse to begin an assessment.

While ATNS is a useful tool for performing noise screens, there are several situations not covered by former Notice N7210.360, and therefore not covered by ATNS. Those situations include Environmental Justice, operations below 3000 feet, commuter operations, contribution from enroute flights, and enroute flights. These situations may apply and any route change "passing" ATNS should be evaluated for these factors as well.

Before beginning the assessment, there is a list of items you will need in order to complete the assessment. The Checklist for ATNS is a detailed list of items you will need to collect for the specified airport and area you will be assessing. You will need to collect the following information:

* Description of Change (route location/altitude/no. operations)
* Daily Operations of LJA(existing/projected)
* Fleet mix using existing/projected route
* Maps of area
* Charts showing location of existing routes used by LJA
* List of communities within 3 n.mi. of proposed change
* Altitude (AGL) over each community
* Classification for each listed community

You may gather this information from your supervisor, airport managers, area maps, census data, and local

Start   **Help**

Text Window   The **Text Window** contains the introduction, initial instructions, and a list of information you must gather to perform a noise screen. The text window contains a scroll bar. If not all the introductory text is visible, use the scroll bar to move up and down within the text. This text is not user editable.

Start Button

Click on the **Start** button to begin the noise assessment. Activate the Start button either by clicking on it with the mouse or pressing the Alt and S keys simultaneously. When the Start button is selected, the ATNS software closes the Welcome to ATNS dialog and opens the Assessment Information dialog.

5.2 Assessment Information

This dialog box (see Figure 12) appears when you click on the **Start** button from the Welcome to ATNS dialog box. Enter the filename and description for the assessment as well as the airport name, your name, title, and facility. This dialog is the record keeping dialog for general information regarding a particular assessment in ATNS.

Figure 12. Assessment Information

Assessment Name Edit Box

This box is used to enter the filename for this noise analysis. Type in a name for the assessment.

Airport Name Edit Box

Enter the name or abbreviation of the airport near which the proposed change will occur.

Assessment Description	Enter a brief description of the assessment to be performed.
Name Edit Box	Enter your name here.
Title Edit Box	Enter your title here.
Facility Edit Box	Type in the facility at which the assessment is being performed.

5.3 Type of Operation

This dialog box (see Figure 13) allows you to indicate the type of aircraft operation for the proposed route change. The choices for the type of operation affected by the route change are **Departure, Arrival,** or **Enroute.** These choices are mutually exclusive; only one may be selected at a time. Activating a new selection deactivates the previously activated selection.

Figure 13. Type of Operation
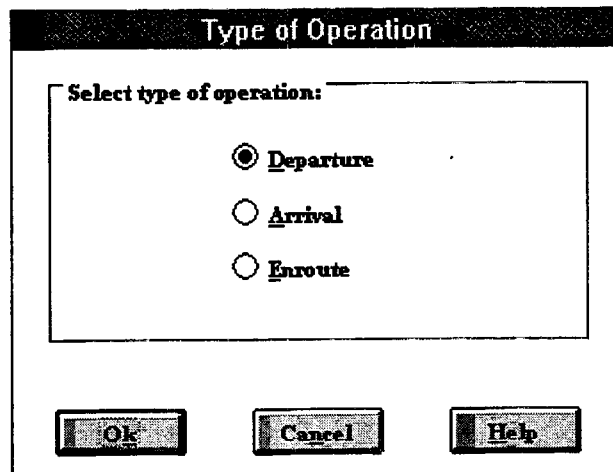
Departure Button	Select this option if the route change action involves a departure route.
Arrival Button	Select this option if the route change action involves an arrival route.

Enroute Button   Select this option if the route change action is neither a departure nor an arrival. The assessment will end if this option is selected when you click on the Ok button. Enroute assessments are beyond the scope of ATNS.

5.4 Annual LJA Operations at Facility

This dialog box (see Figure 14) allows entry of the number of annual large jet aircraft (LJA) operations at the facility (airport) that the proposed route will be approaching or departing.

Figure 14. Annual LJA Operations at Facility

Current Annual LJA Operations   Enter the current annual LJA operations at the facility (airport). Either enter the number manually by placing the cursor within the desired edit box or by using the ▲ and ▼ buttons to increment or decrement the count. (Increment and decrement values are set from the Main Menu under Options - Set Increment Value).

Projected Annual LJA Operations Edit Box   Enter the projected annual LJA operations at the facility (airport). Either enter the number manually by placing the cursor within the desired edit box or by using the ▲ and ▼ buttons to increment or decrement the count.

5.5 Intent of Proposed Route Change

This dialog box (see Figure 15) allows you to enter the purpose of the proposed route change. The choices are **Permanent Change, Planned Test,** or **Other.** The choices are mutually exclusive; no more than one may be selected at a time. Activating a new selection deactivates the previously activated selection.

Figure 15. Intent of Proposed Route Change
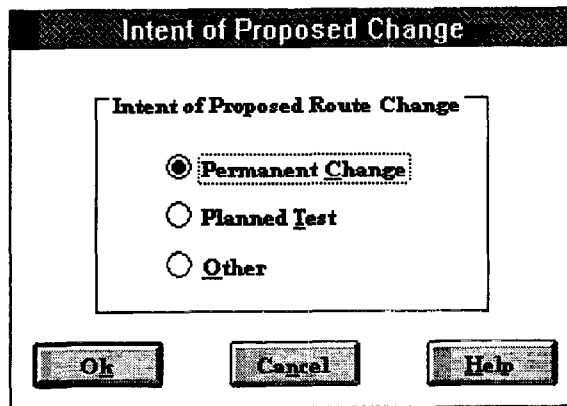
Permanent Change	Select this option if the change action is a permanent change.
Planned Test	Select this option if the change action is a planned test.
Other	Select this option if the change action is neither a permanent change nor a planned test. Change actions that are not a permanent change or a planned test are beyond the scope of ATNS. If this item is selected, the current assessment will end.

5.6 Communities Within 3 n.mi. of Centerline

This dialog box (see Figure 16) is used to enter information about communities within 3 n.mi. of the centerline of the route change action. You may **Add**, **Edit**, or **Remove** a community or any of its parameters.

Figure 16. Communities Within 3 n.mi. of Centerline

Communities List	This list box holds information about each community. If the number of items in the list exceeds the number visible in the viewing area, you may scroll through the list by using the scroll bar to the right of the box. Double clicking on the item will allow you to edit the item (Section 5.7).
Add Community to List	Use this button to add community information to the list. Clicking on this button causes the Add Community dialog box (see Figure 17) to appear.
Edit Community Parameters	Use this button to edit information about a community that is already present in the list. When this button is selected, the Edit Community dialog box (see Figure 18) appears, and parameters for the community currently highlighted in the list box may be edited.
Remove Community from List	Use this button to remove a community from the list box. When this button is selected, the community currently highlighted in the list box is removed from the list box.

5.7 Add Community and Edit Community

These dialog boxes (see Figures 17 and 18) appear when you click on the Add Community to List button or the Edit Community Parameters button, respectively. It allows entry of or changes to parameters for a selected community.

Figure 17. Add Community   Figure 18. Edit Community

Name Add / Edit Box	Used to enter the name of the community.
State Add / Edit Box	Used to enter the state in which the community is located. No check is performed to determine whether state abbreviations are correct.
Type of Community Box	This box contains the options which allow you to indicate the community's population density/noise rating classification. The box consists of four choices: **Quiet Suburb, Normal Suburb, Urban Community,** and **Noisy Urban Community.** The choices are not mutually exclusive, and you may select more than one type per community.
Quiet Suburb Check Box	Choose this designation if the community is comprised of single-family detached dwellings on large lots (greater than ⅓ acre).

Normal Suburb Check Box	Choose this designation if the community is comprised of single-family detached dwellings on $\frac{1}{4}$ to $\frac{1}{3}$ acre lots.
Urban Community Check Box	Choose this designation if the community is comprised of multi-family dwellings (apartment buildings, row housing, etc.).
Noisy Urban Community Check Box	Choose this designation if the community is comprised of multi-family dwellings (high rise apartments) near busy roads or industrial areas.

Important Note: If you are unable to classify the community in question, you should describe the community as having all types, i.e., all four types should have an X in the box. This ensures that ATNS will look at all possibilities to evaluate the worst case scenario.

5.8 Closest Community to Airport Information

This dialog box (see Figure 19) allows you to specify which community is the closest overall to the airport, and to enter the minimum altitude of both existing and proposed routes over that community.

Figure 19. Closest Community to Airport Information

Name of Closest Community to Airport   This drop down list box contains the names of all the communities entered in the Communities Within 3 n.mi. of Centerline dialog box. Choose a community from the drop down list by clicking on the ▨ with the mouse. Scroll through the list until the community you want to select is visible. Click on the name of that community to select it.

Minimum Altitude Along Existing Route   Enter the minimum altitude of the existing route over the community named in the Name of Closest Community to Airport drop down list box. You may enter the numbers manually or by using the ▨ and ▨ buttons to increment or decrement the count.

No Existing Route   Check this designation if no altitude can be entered because no existing route passes above the community.

Minimum Altitude Along Proposed Route Edit   Enter the minimum altitude of the proposed route over the community named in the Name of Closest Community to Airport drop down list box. You may enter the numbers manually or by using the ▨ and ▨ buttons to increment or decrement the count.

5.9 Number of Stage 2 & 3 Daily Operations

This dialog box (see Figure 20) allows entry of the number of Stage 2 and Stage 3 aircraft using both the existing and proposed routes daily. ATNS will convert the user-entered operations for Stage 2 and Stage 3 aircraft to ETOs, as explained in Appendix C, "Technical Notes".

Figure 20. Number of Stage 2 and 3 Daily Operations

Existing Route Information
This group contains the edit boxes in which you enter the number of Stage 2 and Stage 3 operations for the existing route.

Day vs. Night Operations
Day operations are considered to be between 7:00AM and 10:00PM, and night operations are considered to be between 10:00PM and 7:00AM.

Stage 2 Operations
Enter the number of Stage 2 aircraft that use the existing route daily. You may either enter the numbers manually or by using the ▲ and ▼ buttons associated with the edit box to increment or decrement the count.

Stage 3 Operations
Enter the number of Stage 3 aircraft that use the existing route daily. You may either enter the numbers manually or by using the ▲ and ▼ buttons associated with the edit box to increment or decrement the count.

| **Proposed Route Information** | This group contains the edit boxes where you enter the number of Stage 2 and Stage 3 operations for the proposed route. |

| **Day vs. Night Operations** | Day operations are considered to be between 7:00AM and 10:00PM, and night operations are considered to be between 10:00PM and 7:00AM. |

| **Stage 2 Operations** | Enter the number of Stage 2 aircraft that will use the proposed route daily. You may either enter the numbers manually or by using the ▨ and ▨ buttons associated with the edit box to increment or decrement the count. |

| **Stage 3 Operations** | Enter the number of Stage 3 aircraft that will use the proposed route daily. You may either enter the numbers manually or by using the ▨ and ▨ buttons associated with the edit box to increment or decrement the count. |

Important Note:

Stage 2 aircraft are the following types:	*Stage 3 aircraft are the following types:*
B707 with quiet nacelles	B747
B727s	DC10
B737-100 and 200	DC8-70
BAC 1-11	Airbus
DC8 with quiet nacelles	B767
DC9-10 through 50	B757
F28	MD80
	B737-300
	B777

It should be noted that some aircraft listed as Stage 2 may be hushkitted to meet Stage 3 requirements. However, if the user is unable to ascertain whether operations involve hushkitted aircraft, we recommend modeling conservatively (i.e., model a 727 as a Stage 2).

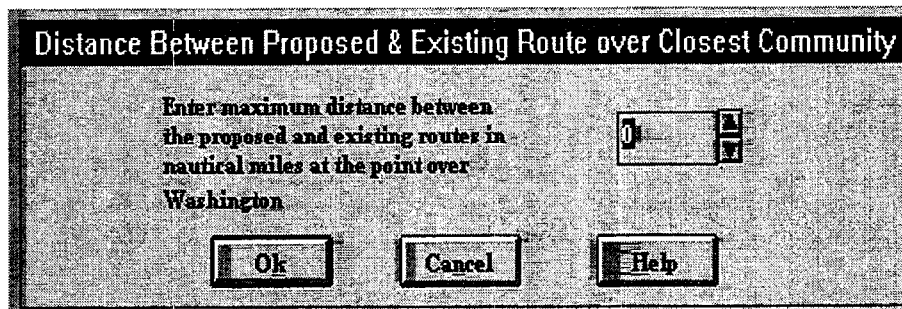## 5.10 Distance Between Proposed and Existing Route Segments

This dialog box (see Figure 21) allows entry of the distance from the centerline of the proposed route to the centerline of the closest existing route along the continuum of the routes. The longest distance (in nautical miles) between the two routes, out to and including the farthest affected community, is the value which should be entered in this dialog.

Figure 21. Distance Between Proposed and Existing Route Segments

Distance Edit Box   Enter the value for the farthest distance between the existing route and the proposed route along the continuum of the routes, out to and including the farthest affected community. Data may be entered either manually or by using the ▣ and ▣ buttons.

5.11   Distance Between Proposed and Existing Route over Closest Community to Route

This dialog box (see Figure 21) allows entry of the distance from the centerline of the proposed route to the centerline of closest existing route at the point at which they pass over the closest community.

Figure 22.   Distance Between Proposed and Existing Route over Closest Community

Distance Edit Box   Enter the value for the distance between the two routes over the closest community. Data may be entered either manually or by using the ▣ and ▣ buttons.

5.12 Types of Communities Closest to Airport

For each of the four different types of communities, these dialog boxes (see Figure 23) allow you to specify which Quiet Suburb, Normal Suburb, Urban Community, or Noisy Urban Community is closest to the airport, and to enter the minimum altitude at which the proposed route would pass over each type of community. The screen views and entry fields are the same for each community, but the title of the box varies accordingly.

Figure 23. Closest Community to Airport

There are two types of data needed for these dialog boxes: Name of Community and Minimum Altitude.

Name of Quiet Suburb Closest to Airport

This drop down list box contains the names of all the communities classified as quiet suburbs entered in the Communities Within 3 n.mi. of Centerline dialog box. The name appearing in the visible item at the top of the list box in the edit box will be the community you designated as the closest quiet suburb. Choose this community from the drop down list. To choose a community from the drop down list, click on the ▓ with the mouse. Scroll through the list until the community you want to select is visible. Double click on the name of that community to select it.

Name of Normal Suburb Closest to Airport

This drop down list box contains the names of all the communities classified as normal suburbs entered in the Communities Within 3 n.mi. of Centerline dialog box. The name appearing in the visible item at the top of the list box in the edit box will be the community you designated as the closest normal suburb. Choose this community from the drop down list. To choose a community from the drop down list, click on the ▓ with the mouse. Scroll through the list until the community you want to select is visible. Double click on the name of that community to select it.

Name of Urban Community Closest to Airport

This drop down list box contains the names of all the communities classified as urban communities entered in the Communities Within 3 n.mi. of Centerline dialog box. The name appearing in the visible item at the top of the list box in the edit box will be the community you designated as the closest urban community. Choose this community from the drop down list by clicking on the ▓ with the mouse. Scroll through the list until the community you want to select is visible. Double click on the name of that community to select it.

Name of Noisy Urban Community Closest to Airport

This drop down list box contains the names of all the communities classified as noisy urban communities entered in the Communities Within 3 n.mi. of Centerline dialog box. The name appearing in the visible item at the top of the list box in the edit box will be the community you designated as the closest noisy urban community. Choose this community from the drop down list. To choose a community from the drop down list, click on the ▓ with the mouse. Scroll through the list until the community you want to select is visible. Double click on the name of that community to select it.

Minimum Altitude AGL Edit Box

Enter the minimum altitude at which the proposed route would pass over the community selected in one of the four drop down list boxes described above. You may either enter the numbers manually or by using the ▓ and ▓ buttons to increment or decrement the count.

5.13 Current Noise Assessment Finished

This dialog box (see Figure 24) is the last dialog box viewed when the noise assessment is complete. It serves as a conclusion for the noise assessment, and contains all assessment data, results, and instructions for using the generated report file. It also gives the user the option to save or edit the current assessment, print the results, begin a new assessment, or exit ATNS.

Figure 24. Current Assessment Finished

Text Window	The text window contains input data instructions and the report of the noise assessment results. This text is not user editable.
Save Assessment	Click on this button to save the current assessment to disk. A **Save As** dialog box will appear. This allows the user to assign a directory and name to save the assessment text file (.txt) and data file (.dat).
Edit Assessment	Click on this button to edit your inputs for this assessment.

New Assessment   Click on this button to start a new assessment. This dialog will disappear, the data will be cleared, and the Welcome to ATNS dialog box will appear. *Note: All data from the previous assessment will be cleared and lost if this button is selected and the assessment has not been saved.*

Exit ATNS Button   Click on this button to exit ATNS at this point.

6.0 Documentation

An assessment will be saved under the file name you assigned to the assessment in the **Assessment File Information** dialog box (see Figure 24) followed by **.TXT**. The data file will be saved under the same file name followed by **.DAT**.

To print the assessment, select the **Print Results...** option from the **File** menu. This option will bring up the familiar Windows 95 print dialog box. Alternatively, you may open the saved **.TXT** file in any text editor or word processor.

Figure 25. Sample Output Documentation

```
                      NOISE SCREENING PROCEDURE FOR
                    CERTAIN AIR TRAFFIC ACTIONS ABOVE
                            3,000 FEET AGL
```

DATE: Wed Jan 13 12:58:35 1999

Airport Name: Norbert

Assessment Description: Norbert 28 Arrivals
Facility Conducting Review: HQ
Name/Title of Reviewer: JZ
                              ATCS

ASSESSMENT RESULTS
Assessment terminated because proposed change will not cause a 5dB or more
increase in noise. ATNS assessment indicates NO NEW NOISE impact from the
proposed action.

ASSESSMENT DATA
TYPE OF OPERATION: Arrival

ANNUAL LJA OPERATIONS:
        CURRENT: 277400   PROJECTED: 277400

INTENT OF PROPOSED ROUTE CHANGE: Proposed Change

COMMUNITIES WITHIN 3nm OF PROPOSED CHANGE:
Name   State   Type
Horatio   AZ   UC
Webster   AZ   NS

CLOSEST COMMUNITY: Webster   EXISTING ALTITUDE: 5000   PROPOSED ALTITUDE: 4000

CLOSEST NORMAL SUBURB: Webster   PROPOSED ALTITUDE: 4000

CLOSEST URBAN COMMUNITY: Horatio   PROPOSED ALTITUDE: 6500

NUMBER OF DAILY OPERATIONS:
        PROPOSED Route   STAGE 2 Day: 137   STAGE 3 Day: 72
                          STAGE 2 Night: 17   STAGE 3 Night: 8
        EXISTING Route   STAGE 2 Day: 83   STAGE 3 Day: 39
                          STAGE 2 Night: 9   STAGE 3 Night: 4

DISTANCE BETWEEN PROPOSED AND EXISTING ROUTES:
        ALONG CONTINUUM: 3   OVER CLOSEST COMMUNITY: 3

Assessment performed using the Air Traffic Noise Screening (ATNS) Model
Version 2. Please refer to FAA Order 1050.1, Policies and Procedures for
Considering Environmental Impacts.

Appendix A. ATNS Order Form

Order Form for the Air Traffic Noise Screening Model (ATNS), Version 2.0

Last Name   First Name

Organization   Division

Street Address

U.S. Only

City   State   Zip

International Only

Postal Codes and City

Country

U.S. and International

Telephone   Fax   E-mail Address

Minimum hardware and software required to run ATNS:
- 486 DX 33 MHz PC
- 1.5 Mb hard disk
- 8 MB RAM
- Monitor with 800x600 resolution.
- Either Windows 95 or Windows NT Workstation 4.0 (preferred), or Windows 98.

If you are working from a network, we suggest you have your system administrator execute the installation and set up a directory. If you are working from an individual PC, you or a system administrator can install the application. The staff at the Office of Environment and Energy, Analysis and Evaluation Branch (AEE-120), are available to provide technical assistance on the use and application of the model. If you have any questions or need technical assistance, please contact Emily Barnett at (202) 493-4424. To request a copy of ATNS, please complete this form and fax to (202) 267-5594, or mail it to:

>Attn: Emily Barnett
>Federal Aviation Administration, Room 902
>Office of Environment and Energy (AEE-120)
>800 Independence Avenue, SW
>Washington, DC 20591

U.S. orders will be sent via U.S. Mail and non-U.S. orders via Air Mail. Express delivery (e.g., Federal Express) may be used if you request such delivery and include your express delivery account number so that the delivery cost is billed to you.

For Office Use Only.   Serial Number: Date of Order:
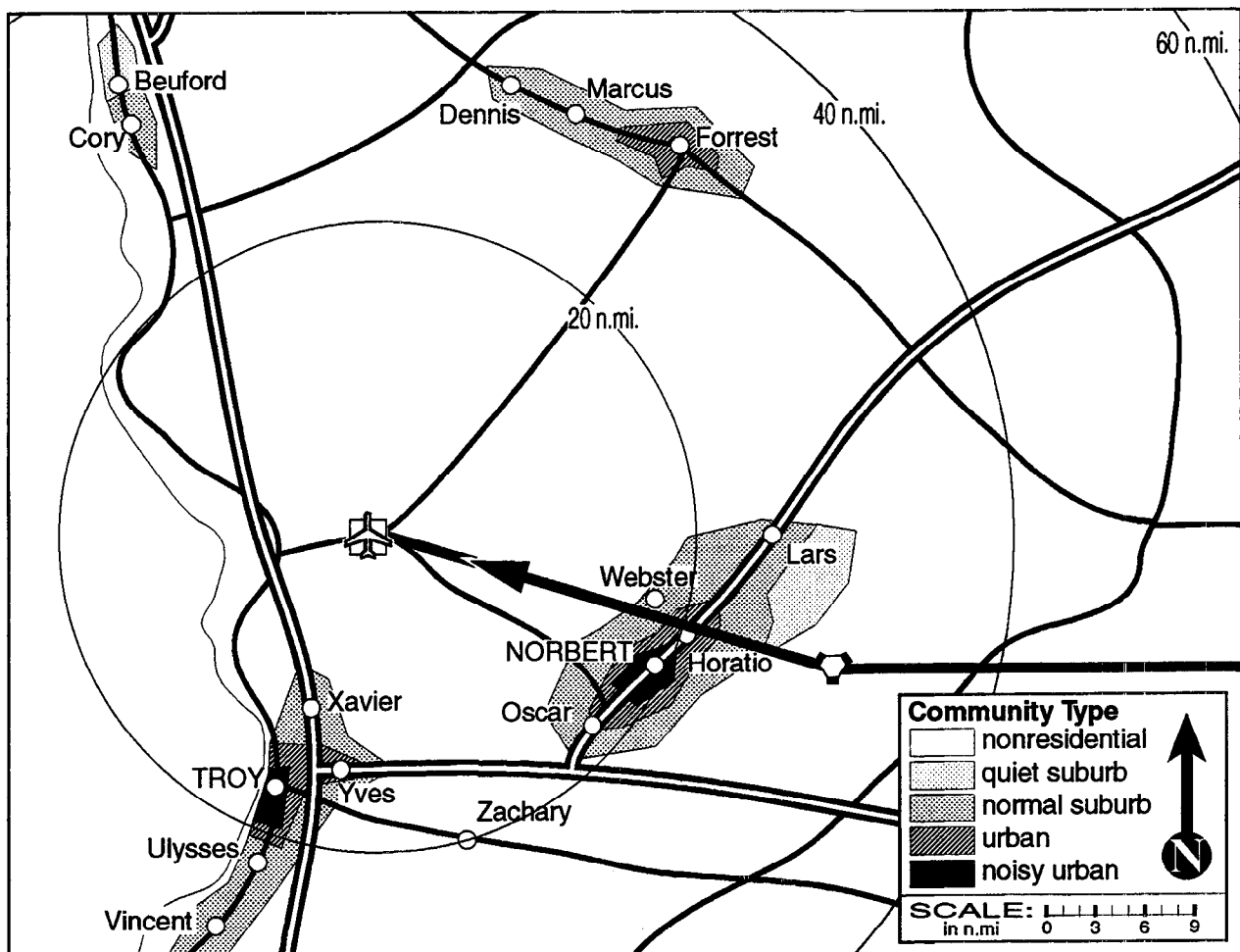
Appendix B. Practice Problems

Practice Problem 1: Norbert Community Airport

The purpose of this proposed change action is to accommodate increased traffic during peak arrival periods at Norbert Community Airport.

Proposed change in altitude and number of arrival operations for runway 28: Fly heading 285 beginning 30 n.mi. east of airport, descending to at or above 6,500 ft. (AGL) over Horatio and 4,000 ft. (AGL) over Webster instead of at or above 7,500 ft. (AGL) over Horatio and 5,000 ft. (AGL) over Webster.

Norbert Community Airport handles approximately 277,400 large jet aircraft operations annually. The proposed change will increase the number of aircraft using this arrival route daily from 83 Stage 2 aircraft during the day and 9 at night to 137 and 17 respectively. Stage 3 aircraft operations will increase from 39 daytime and 4 nighttime to 72 daytime and 8 nighttime. No other changes to the current route are proposed and no other routes are in the vicinity of the proposed route.

NOISE SCREENING PROCEDURE FOR
CERTAIN AIR TRAFFIC ACTIONS ABOVE
3,000 FEET AGL

DATE: Wed Jan 13 12:58:35 1999

Airport Name: Norbert

Assessment Description: Norbert 28 Arrivals
Facility Conducting Review: HQ
Name/Title of Reviewer: JZ
                              ATCS

ASSESSMENT RESULTS
Assessment terminated because proposed change will not cause a 5dB or more
increase in noise. ATNS assessment indicates NO NEW NOISE impact from the
proposed action.

ASSESSMENT DATA
TYPE OF OPERATION: Arrival

ANNUAL LJA OPERATIONS:
        CURRENT: 277400   PROJECTED: 277400

INTENT OF PROPOSED ROUTE CHANGE: Proposed Change

COMMUNITIES WITHIN 3nm OF PROPOSED CHANGE:
Name   State   Type
Horatio   AZ   UC
Webster   AZ   NS

CLOSEST COMMUNITY: Webster   EXISTING ALTITUDE: 5000   PROPOSED ALTITUDE: 4000

CLOSEST NORMAL SUBURB: Webster   PROPOSED ALTITUDE: 4000

CLOSEST URBAN COMMUNITY: Horatio   PROPOSED ALTITUDE: 6500

NUMBER OF DAILY OPERATIONS:
        PROPOSED Route   STAGE 2 Day: 137   STAGE 3 Day: 72
                          STAGE 2 Night: 17   STAGE 3 Night: 8
        EXISTING Route   STAGE 2 Day: 83   STAGE 3 Day: 39
                          STAGE 2 Night: 9   STAGE 3 Night: 4

DISTANCE BETWEEN PROPOSED AND EXISTING ROUTES:
   ALONG CONTINUUM: 3   OVER CLOSEST COMMUNITY: 3

Assessment performed using the Air Traffic Noise Screening (ATNS) Model
Version 2. Please refer to FAA Order 1050.1, Policies and Procedures for
Considering Environmental Impacts.

Practice Problem 2: Ginger Municipal Airport

The standard instrument departure (SID) for runway 32 at Ginger Municipal Airport has been revised to accommodate an expected increase in westbound departures.

Proposed change in departure route for westbound aircraft: Use runway 32 and fly heading 320 until reaching 5,600 ft. (AGL) after 15 n.mi.; then turn left to heading 270 and continue climb out to or above 11,600 ft. (AGL) over Cork.

Ginger Municipal Airport handles approximately 36,500 large jet aircraft operations annually. An estimated 15 stage 2 aircraft during the day and 60 stage 2 aircraft at night will use the proposed route as well as 5 stage 3 during the day and 10 stage 3 at night. No other routes are in the vicinity of either the current or proposed routes.
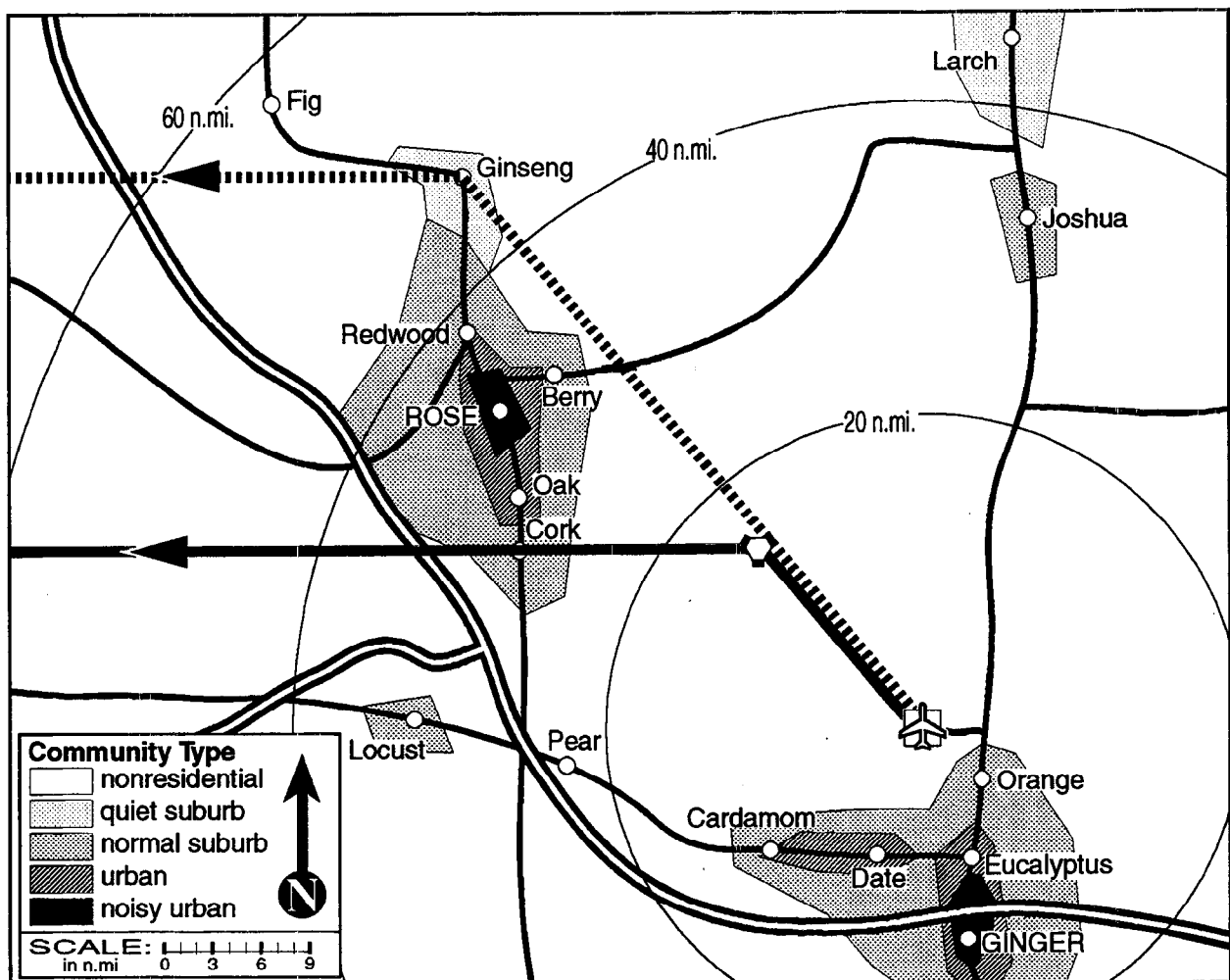
NOISE SCREENING PROCEDURE FOR
CERTAIN AIR TRAFFIC ACTIONS ABOVE
3,000 FEET AGL

DATE: Wed Jan 13 11:10:40 1999

Airport Name: Ginger

Assessment Description: Ginger 32 SID
Facility Conducting Review: HQ
Name/Title of Reviewer: JZ
                              ATCS

ASSESSMENT RESULTS
Assessment terminated because proposed change may cause a 5dB or more increase
in overall noise level. ATNS assessment indicates that the proposed action
WILL result in a possible noise impact.

ASSESSMENT DATA
TYPE OF OPERATION: Departure

ANNUAL LJA OPERATIONS:
        CURRENT: 36500   PROJECTED: 36500

INTENT OF PROPOSED ROUTE CHANGE: Proposed Change

COMMUNITIES WITHIN 3nm OF PROPOSED CHANGE:
Name   State   Type
Cork   AZ   NS
Oak   AZ   UC

CLOSEST COMMUNITY: Cork   EXISTING ALTITUDE: 0   PROPOSED ALTITUDE: 11600

CLOSEST NORMAL SUBURB: Cork   PROPOSED ALTITUDE: 11600

CLOSEST URBAN COMMUNITY: PROPOSED ALTITUDE: 0

NUMBER OF DAILY OPERATIONS:
        PROPOSED Route   STAGE 2 Day: 15   STAGE 3 Day: 5
                          STAGE 2 Night: 60   STAGE 3 Night: 10
        EXISTING Route   STAGE 2 Day: 0   STAGE 3 Day: 0
                          STAGE 2 Night: 0   STAGE 3 Night: 0

DISTANCE BETWEEN PROPOSED AND EXISTING ROUTES:
   ALONG CONTINUUM: 3   OVER CLOSEST COMMUNITY: 3

Assessment performed using the Air Traffic Noise Screening (ATNS) Model
Version 2. Please refer to FAA Order 1050.1, Policies and Procedures for
Considering Environmental Impacts.

Practice Problem 3: Flamingo Consolidated Airport

The purpose of this proposed change action is to provide a means of navigation from runway 30 so that a visual approach and landing can be made by aircraft using its on board Flight Management System (FMS).

Proposed change in arrival route for all aircraft using runway 30: Fly heading 280 passing over Ocelot at or above 16,000 ft. (AGL) until 35 n.mi. southeast of airport, then turn right to heading 330 descending to at or above 5,600 ft. (AGL) over Eagle and at or above 4,000 ft. (AGL) over Tanager. This new route is 17 miles along the continuum from the original route.

Flamingo Consolidated Airport handles approximately 80,300 large jet aircraft operations annually. Daily, 108 stage 2 daytime aircraft operations and 12 stage 2 nighttime operations use the route. The airport currently handles no stage 3 aircraft. An expected 144 daytime and 16 nighttime Stage 2 aircraft and 198 daytime and 22 nighttime Stage 3 aircraft will use the proposed arrival route daily. No other routes are in the vicinity of either the current or proposed routes.
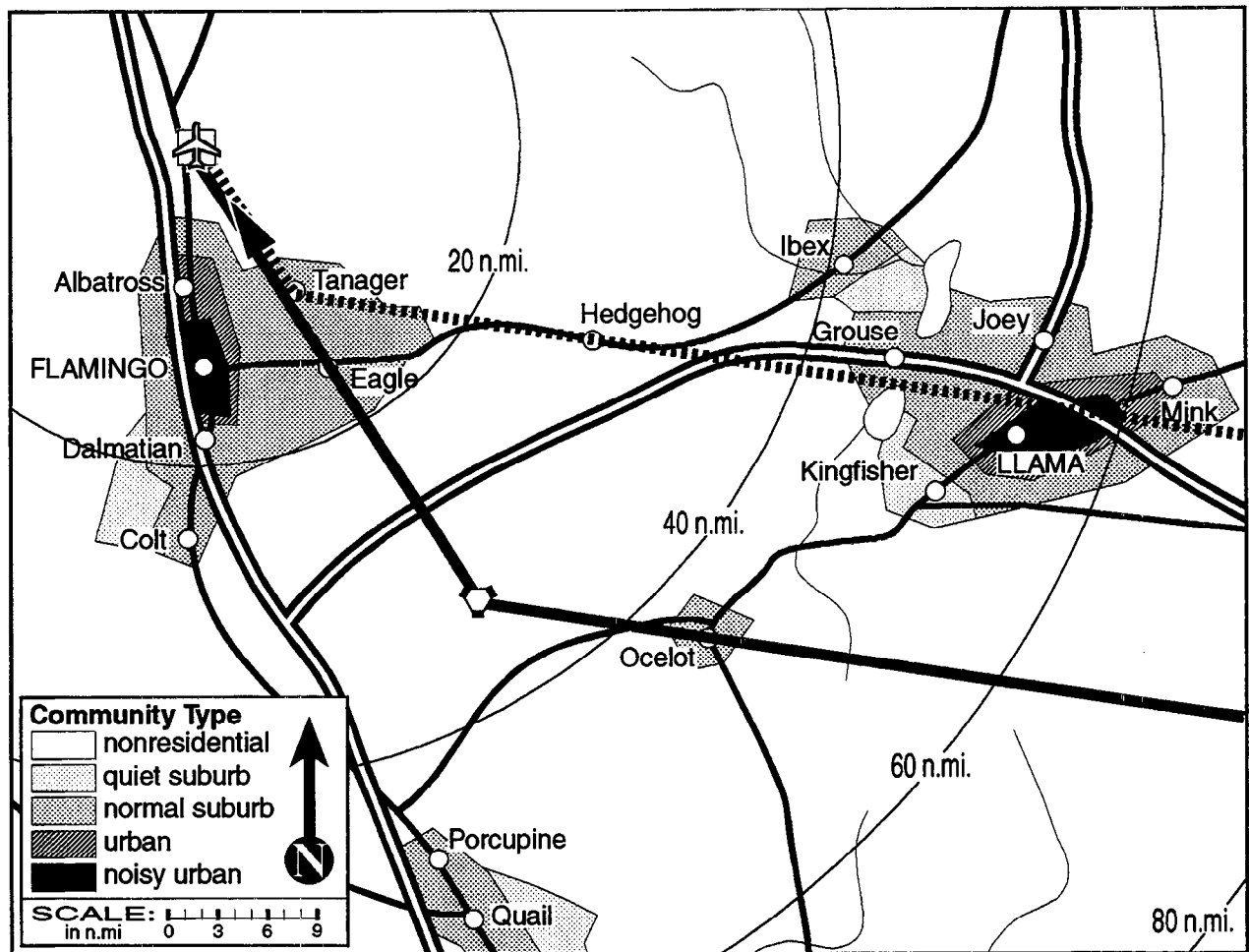
NOISE SCREENING PROCEDURE FOR
CERTAIN AIR TRAFFIC ACTIONS ABOVE
3,000 FEET AGL

DATE: Wed Jan 13 13:12:09 1999

Airport Name: Flamingo

Assessment Description: Flamingo 30 FMS Arrivals
Facility Conducting Review: HQ
Name/Title of Reviewer: JZ
                               ATCS

ASSESSMENT RESULTS
Assessment terminated because proposed change will not cause a 5dB or more
increase in noise.   ATNS assessment indicates NO NEW NOISE impact from the
proposed action.

ASSESSMENT DATA
TYPE OF OPERATION: Arrival

ANNUAL LJA OPERATIONS:
       CURRENT: 80300   PROJECTED: 80300

INTENT OF PROPOSED ROUTE CHANGE: Proposed Change

COMMUNITIES WITHIN 3nm OF PROPOSED CHANGE:
Name   State   Type
Ocelot   AZ   NS
Eagle   AZ   NS
Tanager   AZ   NS

CLOSEST COMMUNITY: Tanager   EXISTING ALTITUDE: 4000   PROPOSED ALTITUDE: 4000

CLOSEST NORMAL SUBURB: Tanager   PROPOSED ALTITUDE: 4000

NUMBER OF DAILY OPERATIONS:
       PROPOSED Route   STAGE 2 Day: 144   STAGE 3 Day: 198
                          STAGE 2 Night: 16   STAGE 3 Night: 22
       EXISTING Route   STAGE 2 Day: 108   STAGE 3 Day: 0
                          STAGE 2 Night: 12   STAGE 3 Night: 0

DISTANCE BETWEEN PROPOSED AND EXISTING ROUTES:
       ALONG CONTINUUM: 17   OVER CLOSEST COMMUNITY: 3

Assessment performed using the Air Traffic Noise Screening (ATNS) Model
Version 2.   Please refer to FAA Order 1050.1, Policies and Procedures for
Considering Environmental Impacts.

Appendix C. Technical Notes

ATNS 2.0 Technical Notes

Update of the Reference Aircraft

ATNS relates a change in the number of operations along an existing or modified route to a change in noise exposure over a community. The model contains a set of decision tables that gives the minimum number of aircraft needed to cause a DNL 5 dB change over various community types, which reflect different assumptions regarding ambient conditions. The lower the ambient, the fewer aircraft it requires to trigger a DNL 5 dB change.

ATNS does not require the user to enter a detailed fleet mix. Rather, all operations are modeled using a single reference aircraft normalized to a single reference day/night split (the FAA policy noise metric, DNL, imposes a 10 dB penalty on nighttime operations). The core decision tables in ATNS 1.0 were developed using INM 3.9 and a Stage 2, 727-200 with JT8D-15 engines as the reference aircraft (INM aircraft 727D15). The tables in ATNS 2.0 were revised using INM 5.2 and a hushkitted 727-200 with JT8D-15 engines (INM aircraft 727EM2).

Calculation of Effective Total Operations (ETOs)

Reference Aircraft

737-300 – *to represent stage 3*

The ATNS user is asked to enter the number of operations on a route, and the number of operations that are thought to be Stage 2 or Stage 3 aircraft. The model will then convert the Stage 2/Stage 3 values to a "reference number" of operations that may be used with the single set of reference tables. This "reference number" of operations is referred to as the Effective Total Operations (ETOs) throughout this manual.

It is important for the user to obtain an accurate division between Stage 2 and Stage 3 aircraft operations. The difference in the modeled noise impact between Stage 2 and Stage 3 aircraft is substantial, and therefore different divisions can produce varying results. ATNS 1.0 assumed a 20-to-1 noise relationship between the base aircraft (727-200) and the number of Stage 3 operations, as shown in the following formula:

ETO = Stage 2 Ops + (Stage 3 Ops * 0.05)   (1.0 / 0.05 = 20.0)

ATNS 2.0 preserves the noise relationship through the following formula:

ETO = (Stage 2 Ops * 2.88) + (Stage 3 Ops * 0.148)   (2.88 / 0.148 ~= 19.46)

In ATNS 2.0, the reference aircraft has changed, but operations continue to be normalized to preserve the 20-to-1 relationship between Stage 2 and Stage 3 aircraft. In both ATNS 1.0 and 2.0, this relationship assumes Stage 2 aircraft represented by the 727-200 and Stage 3 aircraft

represented by the 737-300. Users attempting to independently model an ATNS scenario in INM may do so using these assumptions.

Reference Day/Night Split

After normalizing to a reference aircraft, ATNS further converts operations to a reference day/night usage. These calculations are directly based on the definition of DNL and are used to preserve a single set of decision tables. In calculating DNL, nighttime operations are given a 10 dB penalty. A typical noise model might convert all operations to daytime operations, in which case the new Effective Total Operations (ETOs) would be modeled as:

$$ETO = (\text{Number of Daytime Ops.}) + (10 * \text{Number of Nighttime Ops.})$$

In ATNS 1.0 the decision tables were based on an assumed 90/10 split percentage between day/night operations. ATNS 2.0 preserves this relationship in its own decision tables to facilitate comparison. For this reason, the conversion of ETOs to a reference day/night split is given by a slightly more complicated formula:

$$\frac{\left(1 + 9 \cdot \left(\dfrac{night\_operations}{day\_operations + night\_operations}\right)\right) \cdot \left(day\_operations + night\_operations\right)}{1.9}$$

Conclusion

The hushkitted reference aircraft (727EM2) used in ATNS 2.0 is quieter than the previous Stage 2 reference aircraft (727D15) used in ATNS 1.0, thus requiring more Effective Total Operations (ETOs) to trigger a 5 dB change. For this reason, the upper limit of the decision tables has been increased from 501 in ATNS 1.0 to 701 in ATNS 2.0. The user should keep in mind that these are reference operations normalized to a common aircraft and common day/night split. They are related to what the user has entered by the formulae described in this section. These formulae preserve the 20-to-1 relationship between Stage 2 and Stage 3 aircraft, and keep the results obtained using ATNS 2.0 consistent with those of ATNS 1.0.